ATTACHMENT NO. 1

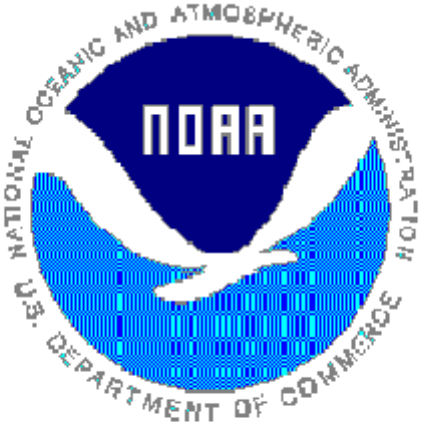
STATEMENT OF WORK FOR A FISCHER-PORTER/BELFORT

PRECIPITATION GAUGE ELECTRONIC SENSOR UPGRADE

SPECIFICATION NO. D111-4A1-SW001

APRIL 2000

20 PAGES



STATEMENT OF WORK

FOR A

FISCHER AND PORTER/BELFORT PRECIPITATION GAUGE

ELECTRONIC SENSOR UPGRADE

SPECIFICATION NO.: D111-4A1-SW001

April 2000

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
National Weather Service
Engineering Design Branch, W/OSO31
1325 East-West Highway
Silver Spring, MD 20910-3283

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1.0 SCOPE

1.1 General

This Statement of Work (SOW) provides the specific requirements for work to be performed by the Contractor for the production, test, delivery, and documentation of the Fischer and Porter/Belfort Precipitation Gauge (F&P) Electronic Sensor Upgrade, Gauge Modification Assembly (GMA) and Display and Communication (DCOM) units, associated spares, documentation and support equipment for the National Weather Service (NWS). The GMA will be deployed nationwide at NWS Weather Forecast Offices (WFO) and Cooperative Observer Program (COOP) climate monitoring sites as a replacement for the existing punched paper tape recording mechanism of the F&P gauge. The requirements for the GMA and DCOM are found in the Specification for the Fischer and Porter/Belfort Precipitation Gauge Electronic Sensor Upgrade, NWS Specification D111-4A1-SD001, herein referred to as the F&P Specification.

2.0 APPLICABLE DOCUMENTS

In the event of conflict between the documents referenced herein, the specification, and this statement of work, the order of precedence shall be the statement of work -- first, the specification -- second, and all referenced documents -- third.

2.1 Government Documents

The following documents, or the issue in effect at the time of issuance of the Request for Proposal (RFP), form a part of this statement of work to the extent specified herein.

2.1.1 Specifications

D111-4A1-SD001	Specification for the Fischer and Porter/Belfort Precipitation Gauge Electronic Sensor Upgrade

2.1.2 Standards

MIL-STD-973	Configuration Management
MIL-HDBK-217	Reliability Stress and Failure Rate Data for Electronic Equipment
MIL-HDBK-472	Maintainability Prediction
MIL-HDBK-1221	Evaluation of Commercial Off-The-Shelf (COTS) Manuals

WS-STD-2	NWS Standard Environmental Criteria and Test Procedures
(No Number)	NWS Transient Susceptibility Standard, May 1978

2.2 Non-Government Documents

The following documents form a part of this statement of work to the extent specified herein. Unless otherwise indicated the issue in effect on date of issuance of the Request for Proposal shall apply.

ANSI/ASQC Q9001	Quality Systems - Model for Quality (ISO 9001) Assurance in Design, Development, Production, Installation, and Servicing
ANSI/ASQC Q9003	Quality System - Model for Quality (ISO 9002) Assurance in Final Inspection and Test
AISO 9000-2	Quality Management and quality assurance standards -- part 2: Generic guidelines for the application of ISO 9001, ISO 9002 and ISO 9003
ASME Y14.24M-1989	Types and Applications of Engineering Drawings
ASME Y14.34M-1996	Associated Lists
EIA/IS-632-94	Systems Engineering
NFPA 70	National Electrical Code

2.3 Source of Documents

NWS Standard Environmental Criteria and Test procedures and NWS Transient Susceptibility Standard may be obtained from:

National Weather Service
Attn: D. Desrosiers, W/OSO31
1325 East West Highway, SSCM2 #3160
Silver Spring, MD 20910-3283

National Fire Protection Association (NFPA) documentation can be obtained from:

National Fire Protection Association
Custodian of Documents
470 Atlantic Avenue
Boston, MA 02210

Electronic Industries Association (EIA) documentation may be obtained from:

EIA
Engineering Department
2001 I Street, N.W.
Washington, D.C. 20006
(202) 457-4963

Applications for copies of military documents should be addressed to:

Standardization Document Order Desk
Bldg. 4D
700 Robbins Avenue
Philadelphia, PA 19111-509

American National Standards Institute (ANSI) and AMSE documentation may be obtained from:

ANSI
11 West 42nd Street
13th floor
New York, NY 10036

2.4 Paragraph Referencing

When paragraphs are referenced herein (whether to other paragraphs in this SOW or to other documents) all subordinate paragraphs to those references shall apply.

2.5 Government Furnished Equipment (GFE) and Data

The Government has not identified any requirement for GFE or data.

3.0 REQUIREMENTS

All requested documents or reports shall be delivered to the Contacting Officer's Technical Representative (COTR) in hard copy or soft copy in WordPerfect or Microsoft Word format, and contain the information requested in the specific paragraphs.

3.1 General

The Contractor shall produce a GMA and DCOM which is compliant with the requirements of the F&P Specification. This Statement Of Work (SOW) identifies the information and products required to demonstrate compliance and the mechanisms to be followed in reporting this information to the Government. In performance of this SOW, the Contractor shall fulfill the requirements specified herein.

In this document and any other Government-generated document used directly or indirectly on this contract, the term Government approval (or any other similar terms) shall be construed as specific written approval from the assigned Contracting Officer (CO) or his/her designee.

3.2 Program Management

3.2.1 Management Planning and Control

The Contractor shall be responsible to ensure effective management of the GMA and DCOM project such that all contract performance and deliverable item requirements are satisfactorily met. The Contractor shall maximize use of cost, schedule, operational control, and contract management mechanisms currently in place, augmenting these mechanisms as required to ensure effective management of this contract.

The Contractor shall prepare and submit a Management Plan within 30 days of contract award, which addresses management planning and control during the development (if required) and production phases of this contract. This plan shall, at a minimum, identify points of contact within the Contractor organization for all management activities. This plan shall describe how the Contractor will manage development, production, and delivery tasks

of this contract. Reference shall be made to the Contractor's standard operating plans, policies and procedures whenever practical.

3.2.2 Program Schedules and Milestones

The Contractor shall develop a Master Milestone/Program Schedule within 30 days of contract award, in the form of a Gantt chart with supporting narrative, to include major milestones of the development (if required) and production phases of this contract which shall specify technical, management, and manufacturing milestones, formal reviews, data submital, delivery, and other significant events and activities that are considered necessary in relating program planning to performance and cost objectives. Subsequent to the initial submital, the Contractor shall submit changes and updates to the Master Milestone/Program Schedule to the Government with the monthly status reports.

3.2.3 System Requirement Matrix

The Contractor shall develop and deliver a preliminary System Requirements Matrix within 30 days of contract award, to document the contract requirements found in the F&P Specification. The Contractor shall develop and deliver a final System Requirements Matrix within 60 days of contract award but at least 15 days before the Test Readiness Review, that shows in tabular form, all requirements of the specification showing traceability between the requirements and the portion of the design/implementation that satisfies each requirement. All requirements shall be referenced by specification paragraph number, and for each traced requirement the matrix shall identify the method used to verify compliance (analysis, demonstration, inspection, or test) and the identity of the Quality Control test/verification-procedure/check used to document compliance. Like requirements may be grouped, as appropriate to the design, in order to simplify the matrix.

3.2.4 Contractor Management Review

The Contractor shall conduct a Management Review within 45 days of contract award, to present the Contractor's management structure, the schedule and the preliminary requirements matrix. This review shall be conducted via telephone, and used to resolve any questions concerning the Master Milestone/Program Schedule, the requirements, or the Contractor management plan. The status against the schedule, and the identity/resolution of any high risk or problem areas of the project will be discussed. The Contractor shall prepare minutes of this review, and shall submit the minutes with the next Monthly Status Report.

3.2.5 Monthly Status Reports

At the beginning of each month, starting after the Management Review, the Contractor shall prepare and submit monthly status/progress reports. The report shall document progress against established program schedules and milestones.

3.3 Compliance Verification Process

A. The process to verify and document requirement compliance shall use the Requirements Matrix as a basis to; a) verify that all requirements are met, and b) to partition the requirements into groups. The process shall consist of the following five steps. Each step is further detailed in a later sub-section.

a.1 Test Readiness Review - will examine the supporting information/data for all Analysis verified requirements.

a.2 Factory Acceptance Testing - will examine and witness the testing and operation of all Demonstration and Test verified requirements. This step will include all functional and environmental verifications requiring demonstration or testing.

a.3 Physical Configuration Audit - will examine and document all Inspection verifiable requirements, and establish the Product Baseline for Configuration Management purposes.

a.4 Government Testing - shall provide independent confirmation and validation of compliance.

a.5 Factory Production Tests and Certification - shall document that all produced units meet the established Configuration Management and Quality Control procedures of the manufacturer.

B. The following additional instructions are applicable to all technical reviews:

b.1 Presentations at the reviews shall be conducted primarily by Contractor personnel, although the Government reserves the right to revise the agenda and make presentations.

b.2 The actual review date and time shall be established by mutual agreement fifteen (15) working days prior to holding the review. The location of the reviews may be changed by mutual agreement.

b.3 The Contractor shall take minutes of the meetings, document action items, and submit minutes to the Government after each review.

b.4 The Contractor shall supply all minutes and reports and respond to all Contractor action items by either closure or a written closure plan within ten (10) working days after each review/test. Unless otherwise specified by the Government, an action item is not closed until Government approval is given.

b.5 Within fifteen (15) working days after receipt of the review or audit minutes, the Government will formally notify the Contractor of the Contractor's review performance by:

(a) Approval - to indicate that the review or audit was satisfactorily completed.

(b) Contingent approval - to indicate that the review or audit is not considered accomplished until satisfactory completion of specified action items.

(c) Disapproval - to indicate that the review or audit was seriously inadequate and must be repeated.

3.3.1 Test Readiness Review (TRR)

The Contractor shall conduct a TRR at the contractor’s facilities, to review the Contractor's readiness to begin the Compliance Verification Process. When the Contractor is ready to preform the first 4 steps of the compliance verification procedure, the Contractor shall provide a written notice to the Government ten (10) days prior to initiation of first test. The Contractor shall present the final design and the final Requirements Matrix, and show the coverage and verification methodology to be applied to each requirement. After the system overview, the contractor shall present the verifying information/data for each requirement satisfied by Analysis. The Contractor shall, as a minimum, present the following information:

1) Presentation of GMA and DCOM built-in test and off-line diagnostics test capabilities. This shall include a discussion of the hardware design of the GMA and DCOM, lowest replaceable units and hardware elements which are critical to operation of the gauge, and the approach to meet the requirements of the GMA and DCOM specification to correctly detect and identify failed field replaceable units 95 percent of the time.

2) Presentation of Logistics Support requirements for the GMA and DCOM, and recommended spares, See 3.3.1.3. Identification of all single source parts and long-lead items used in the design and manufacture of the GMA and DCOM. Identification of all lowest replaceable units (LRU), Submission of an illustrated parts breakdown of all replaceable units. Submission of Vendor Item Drawings and Source Control Drawings, in accordance with ASME Y14.24M-1989, for each LRU.

3) Presentation of data demonstrating reliability, and maintainability of the GMA and DCOM, and approach to meeting the requirements of the specification in these areas. See section 3.3.1.1 and 3.3.1.2.

The Contractor shall prepare and submit the TRR package to the Government. The TRR package shall, at a minimum, contain the TRR agenda, results of all testing, a summary of all information and data referenced, and a cross-reference between the Requirements Matrix and the appropriate information, testing, or data which will demonstrate that the requirement has been met. Additionally, the contractor shall prepare and submit TRR minutes.

3.3.1.1 Reliability Analysis

The Contractor shall prepare and present data which verifies that the GMA and DCOM meets the reliability requirements of the F&P Specification. The data shall be based upon actual field experience or vendor provided information, however, if the actual field experience or vendor provided information does not exist, the Contractor shall perform an analysis of the GMA and DCOM design, in accordance with MIL-HDBK-217, to calculate GMA and DCOM reliability.

The Contractor shall perform and provide a reliability analysis for all changes made after product baseline of this contract.

3.3.1.2 Maintainability

The Contractor shall provide evidence that the installed upgrade equipment meets the maintainability requirements of the GMA and DCOM. This may be evidenced by execution of faulted component test procedures, or by presentation of empirical data obtained within the last 5 years on units of the same hardware design.

If field experience or vendor information is not available, the Contractor shall develop and submit a Maintainability Demonstration Plan and Procedure. The plan and procedure shall demonstrate that the GMA and DCOM meet the maintainability requirements, including the Mean Time To Repair (MTTR). This procedure shall include a list of hardware faults to be inserted into the GMA and DCOM during the demonstration.

The Contractor shall prepare and submit to the Government the Maintainability (Demonstration) Test Report.

3.3.1.3 Spares, Consumables and Test Equipment Recommendations

The Contractor shall prepare a proposed list of spares, consumables, and test equipment, recommending provisioning supply support levels. The Contractor shall base recommendations for spares on the reliability requirements in the GMA and DCOM specification, the supported population and lead times. The Contractor shall present the list of recommended Depot and On-Site spares and corresponding reliability analysis at the TRR. The Depot sparing recommendation shall be based on returning 5 items at a time to the vendor for repair, with a 60-day repair time and 10-day shipping delay. The On-

Site sparing recommendation shall be based on a 95% equipment availability with a 48-hour technician transit response time. The Contractor shall identify items requiring long-lead acquisition time.

These lists shall identify and describe all documentation and procedures, tools, support equipment, test equipment (including fixtures and calibration standards), and test equipment software required for performing GMA and DCOM operational, calibration, and maintenance tasks at all levels. In addition to identification, the required items shall be completely described to enable the Government to make an informed decision regarding the purchase of spares, consumables, and test equipment. The list shall separately identify the items required at each site, and at the depot.

ASME Y14.34M-1996 shall be used for guidance in developing these lists. Each list shall include Vendor prices and Contractor prices for all spare parts, consumables, test equipment, and test equipment software, with delivery to the Government at the NWS depot.

3.3.1.4 Technical Manuals (If ordered)

The Contractor shall include with each delivered GMA, technical manuals as identified in section 6.0 of the GMA and DCOM specification.

The Contractor shall make maximum use of existing manuals in meeting the technical manual requirement. All manuals proposed shall be reviewed against the requirements of MIL-HDBK-1221 for adequacy and completeness. Manuals shall be supplemented where required data is missing. A letter of authorization providing limited copyright release for reprinting "for Government use only" shall be furnished to the Government for each manual. Manuals, shall be provided to the Government on magnetic media or CD-ROM compatible with Windows 95 in HYPERTEXT Markup Language (.htm) or WordPerfect or Adobe Acrobat 3.0 (.pdf) compatible format.

3.3.1.5 Depot Level Technical Documentation (If ordered)

The Contractor shall prepare and provide documentation suitable to permit verification of operation, and calibration of any individual LRU of the system. The manual(s) shall contain sufficient information to always permit isolation and identification of a faulty LRU, identification of required test equipment and fixtures, LRU setup/stimulus/power/response criteria, sufficient schematic or pictorial illustrations to localize test points and identify LRU's, outline and mounting drawings, and test and calibration procedures.

The Contractor shall make maximum use of existing manuals in meeting the Depot Technical Documentation requirement. A letter of authorization providing limited copyright release for reprinting "for Government use only" shall be furnished to the Government for each manual. Manuals, shall be provided to the Government on magnetic media or CD-

ROM compatible with Windows 95 in HYPERTEXT Markup Language (.htm) or WordPerfect or Adobe Acrobat 3.0 (.pdf) or AutoCAD V14 compatible format.

3.3.1.5.1 GMA and DCOM Interface Control Document (ICD)

The Contractor shall prepare and submit an Interface Control Document (ICD) for the GMA and DCOM. The ICD shall provide a comprehensive and complete definition of communication protocol and the associated communication command-set and user interface methods used to invoke all system functions of the GMA, the DCOM, and the intra-GMA/DCOM relationship.

3.3.2 Factory Acceptance Test (FAT)

The Contractor shall conduct a FAT, to verify and demonstrate that the limited production F&P upgrade design is fully compliant with the specification.

The FAT shall be conducted at the Contractor's facilities, and follow a successful TRR. The Contractor shall use the Requirements Matrix as the basis for this phase of testing. The Contractor shall develop detailed test procedures and shall reference the procedures to the appropriate requirement(s) in the Requirements Matrix. For the FAT, the Contractor shall:

a. Certify that test equipment and support equipment are calibrated and operating within their required tolerances.

b. The Contractor shall assure the Government that the test item is ready for test. The Contractor shall successfully run the test procedures prior to scheduling a formal Government-witnessed test or final test run.

c. Perform the tests in accordance with Contractor's Quality Control practices and procedures, and the direction of the lead cognizant Government representative witnessing such tests. The Contractor shall brief the Government representative(s) at the TRR prior to the start of the test. The briefing shall include anticipated test results and limits. The Contractor shall maintain an official test log and any deviations or exceptions to the established test procedures shall be noted in the log and on the certified test procedure. A list of all discrepancies identified through testing, corrective action(s) performed, and the results of the corrective action(s) shall be furnished to the Government as part of the Monthly Status Reports.

d. Provide technically trained personnel to perform tests. Personnel responsible for the design of hardware, software, or firmware under test shall be available during the FAT.

e. Correct deficiencies discovered during testing and verify the corrections through Government-witnessed retesting, as necessary.

Following successful completion of the FAT, the Contractor shall prepare and submit a Test Report.

3.3.2.1 Environmental Qualification Tests

The Contractor shall demonstrate that the GMA and DCOM meets all environmental qualification and engineering requirements of the F&P specification. This may be demonstrated by: 1)submission of successful test results of Contractor testing, 2) submission of the manufacturer's certification or documentation showing that the requirements are met or exceeded, or 3) by presentation of empirical data obtained within the last 5 years on units of the equivalent hardware design. All documentation submitted shall identify the test method used for each environmental requirement, and shall provide sufficient detail about the test method to allow the Government to determine that it is equivalent to the NWS test standards and procedures referenced in section 4 of the F&P specification. Additionally, all documentation submitted shall identify the item tested and shall provide sufficient detail to allow the Government to determine that it is equivalent to the proposed item to be delivered under this contract.

Each unit shall be provided with a known stimulus and shall continue to accurately report during conduct of all tests, except the transportation/storage environment tests. For the transportation/storage tests, the units shall be OFF, secured and packaged for shipment. The Contractor shall use the Requirements Matrix, as the basis for organizing this information. The Contractor shall submit the supporting documentation to the Government.

3.3.3 Physical Configuration Audit (PCA)

The Contractor shall conduct a PCA. The audit shall follow a successful completion of the FAT. PCA shall be conducted in accordance with MIL-STD-973, at the LRU level to verify the information in the Vendor Item and Product specification documents. The Contractor shall prepare and submit the PCA minutes to the Government .

3.3.4 Government Testing

After delivery of the 24 Limited Production units, the Government will perform testing of the GMA and DCOM independent of the Contractor. See Section B.2, paragraph 2, for duration of Government testing. The Government testing will include laboratory calibration tests, environmental compliance, and field tests of the installed upgrade equipment. These tests will be conducted at the Government's Research and Development Center in Sterling, Virginia and other Government facilities.

3.3.4.1 Contractor Support During Government Testing

The Contractor shall provide support to the Government during all phases of the Government's testing of the GMA and DCOM. The Government will document all test discrepancies by issuing a Trouble Report to the Contractor. The Contractor shall respond within 10 working days of receipt of the Trouble Report. The Contractor's response shall include analysis of the reported anomaly, cause of the anomaly, proposed resolution of the anomaly, impact on prior test results, and impact of anomaly resolution on any of the requirements of this contract, including reliability, availability and maintainability. If a change to the baseline configuration is required, the Contractor's response shall include an Engineering Change Proposal.

Upon approval of the Engineering Change Proposal by the Government, the Contractor shall provide the Government with ten Engineering Change Kits (ECK) consisting of hardware, software and instructions required to implement the modification in the field. The Government will be responsible for installation of the ECKs and tests will be conducted to validate performance after the modification. The Contractor shall provide the Government with sufficient quantities of ECKs to completely upgrade the remaining 14 gauges within thirty days after successful completion of the Government OT&E.

3.3.4.2 Rejection and Retest

In the event of failure of any component or test item to comply with the requirements of this SOW and the F&P specification, the vendor shall determine the cause and take corrective action. If rejected, the test item shall be repaired and reworked to correct the defects and shall be resubmitted for acceptance after which all necessary tests shall be repeated. The rejected test item shall not be resubmitted for inspection without furnishing, in writing, all particulars concerning the rejection, measures taken to correct the defects and QA re-inspects. If the test item is rejected after retest, the test item shall not be resubmitted for test without the specific approval of the Government. If investigation indicates that the same defects may exist in items previously accepted, full particulars concerning the defects found, including recommendation for correction shall be furnished to the Government. If it is determined that the cause of failure is a latent defect or unauthorized deviations from the SOW or the GMA and DCOM requirements, in addition to all other rights of the Government in contract or at law, the Government reserves the right to require that adequate corrective measures be applied immediately at the Contractor's expense.

3.4 Quality Assurance

3.4.1 Quality Assurance Program Requirements

The Contractor shall perform Quality Assurance and maintain a quality control system in accordance with ANSI/ASQC Q9001 and Q9003, or other certified or published quality assurance programs enforced by the Contractor. The Contractor shall use guidance from

AISO 9000-2 for application of quality assurance standards. The Contractor shall develop and deliver a Quality Assurance Plan. Contractor submission of this plan shall establish it as a contractual document and shall obligate the Contractor to conform to the procedures and processes established therein. The requirements of the plan shall be applicable to and levied on all subcontractors, vendors, and suppliers as appropriate.

3.4.2 Quality Inspection System

The contractor shall document all system test procedures and shall provide and maintain an inspection system in accordance with MIL-I-45208A or commercial equivalent. System Tests shall assure compliance with all changes from Product to Baseline and demonstrate successful execution of all Baseline requirements.

3.4.3 Quality Assurance Testing

The Contractor shall perform tests to verify that the upgrade equipment components meet the manufacturing requirements of the Contractor's QA program. The manufacturer shall maintain complete test plans and test procedures for each test specified by this paragraph and sub-paragraphs. Tests which result in equipment calibration shall provide traceability to National Institute of Standards and Technology (NIST) standards. NWS reserves the right to observe any tests and procedures on any component or instrument under this specification.

The acceptance test (FAT) phase, which includes the Environmental Qualification (EQ) tests and the Factory Production Test (FPT), shall verify that the GMA, DCOM and its support elements, meet the design and performance requirements as stated in the F&P specification, documents incorporated by reference and the contract. The FPT testing shall identify and verify that each unit produced meets the documented quality control requirements of the Contractor's QA system.

The Contractor shall make maximum use of existing test plans, test procedures and other documentation. The overall test control documents, the Test Plan and associated Test Procedures, shall be submitted to the Government for the final LRU level FPT tests associated with this SOW. The Test Procedures shall be in sufficient detail to support evaluation of system or calibration tolerances.

3.4.4 Factory Production Test

The Contractor shall perform Factory Production Tests on each Limited Production and Production GMA and DCOM in accordance with the Contractor's documented Factory Production Test plan. The Factory Production Test shall be used to verify the consistency of the manufactured product. The Government anticipates that this test plan will be heavily based upon the plan currently used for factory production.

The Test Plan and Test Procedures shall document all manufacturing tests and production quality assurance procedures to be used during production. The Contractor shall select and submit the Factory Production Test Plan and Procedures relating to verification of performance of fully assembled LRUs. Of particular importance to the Government are the plans and procedures relating to calibration of LRUs. The Contractor shall generate and submit to the Government a Certificate of Compliance for each delivered GMA and DCOM which reflects the LRU operation and calibration verification test results, and final quality assurance audits/inspections.

The Contractor shall notify the Government a minimum of 10 days prior to execution of the selected Factory Production Tests for the Limited Production units. The Government shall, at its option, witness execution of all Factory Production Tests.

3.5 Configuration Management (CM)

The Contractor shall establish, implement, and maintain a CM program, in accordance with MIL-STD-973 or commercial equivalent, prior to delivery of the Limited Production units of this contract. This control shall include hardware, software, and documentation. The product baseline hardware and software configuration shall be established upon successful completion of the PCA activities.

The Government recognizes all LRUs by its NWS Agency Stock Number (ASN). Any CM activity reported to the Government shall reference the ASN first, Contractor part number second, and if applicable, the manufacturer's part number third.

Changes to the product baseline hardware and software configuration, established at the completion of successful PCA, shall be made in accordance with MIL-STD-973 or commercial equivalent. Baseline change proposals shall be submitted to the Government as a Request for Change. A Request for Deviation, and Request for Waiver may also be submitted to the Government for consideration. No change to the baseline shall be allow without the written approval of the Government.

Configuration management of GMA and DCOM hardware and software shall be initiated upon completion of successful PCA and shall extend through the production phases.

The Contractor shall develop a Configuration Management Plan, and shall submit this plan to the Government. MIL-STD-973, or commercial equivalent, shall be used as the basis for this plan.

3.6 Production Release

The Contracting Officer (CO) will authorize a Production Release after successful completion of the following:

a. the product baseline is set (PCA)

b. acceptance of the 24 Limited Production units, and

c. conclusion of the Government testing.

All production manufacturing actions prior to the Production Release are at the Contractor's risk.

4.0 GMA and DCOM Hardware Delivery

The Contractor shall deliver all Limited Production equipment and spares, CLINs 001, 002 and 003, to the National Weather Service, Attn: D. Desrosiers W/OSO31, 1325 East West Highway Rm 3160, Silver Spring, MD 20910-3283.

The Contractor shall deliver all production equipment, the spares, all consumables and support equipment purchased under this contract to the National Logistics Support Center (NLSC), 1510 E. Bannister Road, Building 1, Kansas City, Missouri, 64131.
Each unit shall be individually packaged and identified in accordance with the Instructions to Commercial Vendors for Marking and Bar Coding Supplies for Shipment to the National Logistics Support Center, Kansas City, Missouri found as Section J, Attachment No. 2 to this solicitation.

All items delivered to the NLSC shall contain a Certificate of Compliance identifying the tests preformed on the item to certify compliance with the F&P specification and SOW, and the initials or stamp of the test or QC official and date for each test.

5.0 GMA and DCOM Repair

Government repair of the GMA and DCOM components will be accomplished at the Government National Recondition Center in Kansas City. Upon completion of the PCA, the Government will determine the depot support approach for the GMA and DCOM, and will identify depot spares required. To support GMA and DCOM maintenance after the 12-month warranty period, the Contractor shall provide (if the Government orders) all test and depot support equipment and complete procedures and documentation required to accomplish fault detection and isolation, alignment and calibration at the Government Depot.

5.1 Warranty Repair

During the warranty period, GMA and DCOM Lowest Replaceable Units which fail built-in test (See SPEC 3.4.1) will be returned to the Government Depot for verification of failure. The Depot activity will verify the failed items and may return the items to the Contractor for repair. The Contractor shall repair, align, re-calibrate and return the failed items to the Government Depot within sixty (60) days of receipt of the item at the Contractor's facilities. All repaired items shall carry a twelve (12) month warranty from the time of receipt at the Depot.

5.2 Repair (IF ORDERED)

The Contractor shall provide, if the Government orders, optional GMA and DCOM repair during the production phase of this contract to support GMA and DCOM operating outside of the warranty period.

6.0 TRAINING (IF ORDERED)

The Contractor shall, if ordered, develop training course materials and conduct one initial training for up to 15 Government field technicians at the National Weather Service Training Center (NWTC) in Kansas City, MO. The contractor-developed training for Government personnel shall be based upon operation and maintenance activities required for the GMA and DCOM as described in the GMA and DCOM technical manual. Classroom/lecture time shall be an appropriate mix in relation to hands-on training time. Trainees shall have adequate time to learn/perform the tasks that will be required in the performance of GMA and DCOM field operation and maintenance. The training program shall provide an effective means of training personnel throughout the life-cycle of the gauge.

6.1 Training Materials (If ordered)

Training materials shall be prepared by the Contractor to support instructor training and teaching materials and shall supplement the GMA and DCOM technical manual. The training materials shall be suitable for use by the Government and shall be delivered in Contractor format. Training materials shall include a training material outline, topical outline, lecture guide, slides/transparencies, and tests for measurement of student achievement. Use of technical hardware, software, their associated manuals and other formal documentation shall be the prime source of information for the development of training programs and training materials.

The Contractor shall make maximum use of existing manuals in meeting the training materials needs. A letter of authorization providing limited copyright release for reprinting "for Government use only" shall be furnished to the Government for each manual. Manuals, shall be provided to the Government on magnetic media or CD-ROM compatible with

Windows 95 in HYPERTEXT Markup Language (.htm) or WordPerfect or Adobe Acrobat 3.0 (.pdf).

Except as otherwise noted, manuals and training materials shall be printed on 8½ X 11-inch, 60 pound bond paper.

All hard copy of manuals and maintenance training materials shall be bound in three-ring, loose-leaf binders of appropriate size not to exceed 2 inches in thickness (approximately 200 pages per binder).

Fold-out sheets shall be used only when the material cannot be presented satisfactorily on a single page or series of pages. When it is necessary to use a fold-out sheet, a fold-out sheet with a vertical fold, folded with the grain of the paper, shall be prepared with the maximum printable area. Fold-out-fold-up sheets shall not be used without approval of the Government. Fold-out sheets shall not exceed 11 inches by 34 inches including blank apron, 11 inches by 27 inches preferred, and shall be punched on the 11-inch side.

Fold-out sheets shall not contain printing on the back side.

Fold-out sheets shall be made with aprons (one (1) blank page) so all of the printed area of the fold-out is visible when the manual is closed.

For 8½ by 11-inch standard manuals, the printing area utilized shall be 7-inches wide by 10-inches high and shall be arranged on the page so that the printed page can be punched for 3-ring binders. A 1-inch margin shall be provided for punching and the other three margins shall be ½-inch.